a) reacting a **mixture** of **at least two** three-carbon reactants with an effective amount of chlorine and hydrogen fluoride in a reactor in the vapor phase and in the presence of a fluorination catalyst to form a product which comprises a **mixture** of 2,2-dichloro-1,1,1,3,3,3-hexafluoropropane and 2-chloro-1,1,1,2,3,3,3-heptafluoropropane; and then b) separating at least one of 2,2-dichloro-1,1,1,3,3,3-hexafluoropropane and/or 2-chloro-1,1,1,2,3,3,3-heptafluoropropane from said mixture.

No cited prior art shows these steps wherein a **mixture** of CFC-216aa and CFC-217ba are first produced as a result of step (a), followed by a separation of at least one of CFC-216aa and CFC-217ba from the **mixture** of CFC-216aa and CFC-217ba. One feature of the invention is to enable the use of waste product **mixtures** produced from commercial processes that manufacture three-carbon compounds and convert these waste product **mixtures** into CFC-216aa and CFC-217ba. Accordingly, the invention provides a two-step process to manufacture valuable products from low value raw materials including by-products and/or waste streams that are normally incinerated. Please notice that each of CFC-216aa and CFC-217ba have three fluorine atoms on the 1 carbon and three fluorine atoms on the 3 carbon, i.e. 2,2-dichloro-1,1,1,3,3,3-hexafluoropropane (CFC-216aa), 2-chloro-1,1,1,2,3,3,3-heptafluoropropanes (CFC-217ba).

The examiner is correct that some cited prior art shows the production of CFC-216aa and CFC-217ba *individually* from *individual* three-carbon precursors. Other cited prior art shows the production of CFC-216aa and CFC-217ba *individually* while in mixture with other, different by-products, with subsequent separation fro these other, different by-products. However, no combination of cited references shows the steps of forming a **mixture** of CFC-216aa and CFC-217ba as a result of step (a), followed by a separation of at least one of CFC-216aa and CFC-217ba **from the mixture of** CFC-216aa and CFC-217ba.

Sievert, et al relates to the production of a product stream of $CClF_2CClFCF_3$ (only 2 F on the 1 carbon) with $CHF_2CClFCF_3$ (only 2 F on the 1 carbon). While Sievert, et al shows

reacting a halogenated propane with a halogenated propene in a vapor phase with chlorine and HF and while these may be a mixture of two three-carbon reactants, please notice that CFC-216aa may be produced (see col. 5, line 64) or CFC-217ba may be produced (see col. 6, line 2) in a mixture with small amounts of other by-products (see col. 6, lines 5-19). Nowhere is there a suggestion of forming a **mixture of** CFC-216aa and CFC-217ba. Therefore, there is also no suggestion of the step of separating at least one of CFC-216aa and CFC-217ba from a **mixture of** CFC-216aa and CFC-217ba.

Manogue, et al relates to the production of HFC-227ea by hydrogenating essentially pure HCFC-217ba. Nowhere do they disclose or suggest the reaction of a **mixture of at least** two three-carbon reactants with an effective amount of chlorine and hydrogen fluoride in a reactor in the vapor phase and in the presence of a fluorination catalyst to form a product which comprises a **mixture of** CFC-216aa and CFC-217ba. Manogue, et al start their process with a **single** three-carbon reactant, namely CCl_2=$CClCF_3$. The intermediate result after step (a) still has only a single three-carbon reactant. The intermediate result after step (b) still has only a single three-carbon reactant. At the end of step (c) a mixture of two three-carbon reactants is formed but this is **not** then used to produce mixture of CFC-216aa and CFC-217ba. It is noted that Tables 1-3 show examples including a resulting mixture of CFC-216aa and CFC-217ba, however, these are made from a single FC-1213xa starting material and not a mixture of at least two three-carbon reactants.

Webster, et al likewise, show a process whereby CFC-216aa or CFC-217ba may be made individually, however, there is no showing of a **mixture of** CFC-216aa and CFC-217ba. Likewise, there is no separation of at least one of CFC-216aa and CFC-217ba **from a mixture of** CFC-216aa and CFC-217ba. Sequence I at col. 2, line 25 shows the production of CFC-217ba alone. Sequence IIA at col. 2, lines 36, et seq. shows the production of CFC-216aa in mixture with different by-products, i.e. not with CFC-217ba. Sequence IIB at col. 2, lines 53, et seq. shows the production of CFC-216aa in mixture with different by-products, i.e. not with CFC-217ba. Sequence IIC at col. 2, lines 63, et seq. show shows the production of CFC-217ba alone. Sequence III at col. 4, lines 6, et

seq. show a two step production of CFC-216aa alone with subsequent fluorination to CFC-217ba. Sequence IV at col. 4, lines 20, et seq. do not involve CFC-216aa. While some examples show the production of CFC-216aa and CFC-217ba, they are not produced from a mixture of at least two three-carbon reactants.

In summary, none of the primary references to Sievert, et al, Manogue, et al, nor Webster, et al show a process whereby a mixture of at least two three-carbon reactants is reacted with an effective amount of chlorine and hydrogen fluoride in a reactor in the vapor phase and in the presence of a fluorination catalyst to form a product which comprises a **mixture** of CFC-216aa and CFC-217ba, followed by a separation of at least one of CFC-216aa and CFC-217ba from said mixture of CFC-216aa and CFC-217ba.

Miller, et al '135 and Miller, et al '493 are respective employed to show the hydrogenation of CFC-216aa or CFC-217ba in the presence or absence of a catalyst. While this may be true, neither Miller, et al '135 and Miller, et al '493 provide the deficiencies of the primary references to Sievert, et al, Manogue, et al, nor Webster, et al as discussed above. The tertiary reference to Lewis is used to show that HF is available as a vapor or as a liquid. However, the fact that HF is available commercially as a vapor does not provide a suggestion that is *should* be used in vapor form in the claimed reaction.

In conclusion it is respectfully submitted that no combination of he primary references to Sievert, et al, Manogue, et al, nor Webster, et al, optionally in combination with Miller, et al '135 and Miller, et al '493, and further in view of Lewis, show a process whereby a mixture of at least two three-carbon reactants is reacted with an effective amount of chlorine and hydrogen fluoride in a reactor in the vapor phase and in the presence of a fluorination catalyst to form a product which comprises a **mixture** of CFC-216aa and CFC-217ba, followed by a separation of at least one of CFC-216aa and CFC-217ba from said mixture of CFC-216aa and CFC-217ba. For these reasons it is submitted that all grounds of rejection should be withdrawn.

The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the examiner believes there is any matter which prevents allowance of the present application, it is requested that the undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,

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I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office (FAX No. 703- 872-9306) on AUGUST 10, 2004.

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